AN EVALUATION OF THE UBER'S AUTONOMOUS CAR CRASH IN THE SCOPE OF TURKISH CRIMINAL LAW

Uber'in Sürücüsüz Aracının Neden Olduğu Ölümlü Kazanın Türk Ceza Kanunu Kapsamında Değerlendirilmesi

Arş. Gör. Hüseyin ATEŞ*
Av. Mustafa TIRTIR**

Abstract: New concepts and new problems occur as technology develops and for this reason, new solutions are being sought. The concept of autonomous cars, which we have often heard about in recent years, and who will be held criminally responsible for fatal / injured traffic accidents caused by these vehicles are the questions of debate. The incident has been examined as it is the first example of the type of traffic accident that resulted in pedestrian's death by an autonomous car. Considering that the fatal traffic accident occurred in Turkey, who would need to be held responsible regarding criminal law will be examined within the scope of the study. In this context, the investigation stages carried out in the United States will also be mentioned in the study.
Keywords: Autonomous Cars, Self-Driving Cars, Uber, Traffic Accident, Criminal Liability, Negligent Homicide, Turkish Criminal Law, Tempe, Arizona.

Özet: Teknolojinin gelişmesi ile birlikte yeni kavramlar ve yeni sorunlar meydana gelmekte, bu sorunlara ise çözüm arayışı içine girilmektedir. Son yıllardır adını sıklıkla duyduğumuz otonom araç kavramı ve bu araçların karışmış olduğu ölümlü/yaralanmalı trafik kazalarında kimin/kimlerin cezai olarak sorumlu tutulacağı tartışma konusudur. Uber firmasına ait otonom aracın dâhil olduğu ve bir yayanın ölümüyle sonuçlanan trafik kazası türünün ilk örneği olması sebebiyle incelenmiştir. Söz konusu ölümlü trafik kazasının Türkiye'de meydana geldiği düşünüldüğünde kimin/kimlerin ceza hukuku açısından sorumlu tutulması gerektiği çalışmamız kapsamında incelenecektir. Bu kapsamda Amerika Birleşik Devletleri'nde sürdürülen soruşturma aşamalarına da ayrıca değinilecektir.
Anahtar Kelimeler: Otonom Arabalar, Sürücüsüz Arabalar, Uber, Trafik Kazası, Cezai Sorumluluk, Taksirle Öldürme, Türk Ceza Hukuku, Tempe, Arizona.

* Research Assistant (Araştırma Görevlisi), Social Sciences University of Ankara (Ankara Sosyal Bilimler Üniversitesi), huseyin.ates@asbu.edu.tr, ORCID: 0000-0002-3723-4914.
** Attorney at Law (Avukat), Member of Istanbul Bar (İstanbul Barosu Üyesi), PhD Student (Doktora Öğrencisi, Istanbul Medipol University Institute of Social Sciences (Medipol Üniversitesi Sosyal Bilimler Enstitüsü), mustafa@msnhukuk.com, ORCID: 0000-0002-0095-2883.
Makale Geliş Tarihi: 02.03.2021, Makale Kabul Tarihi: 14.04.2021

INTRODUCTION

There is no internationally accepted term for a car that does not need a driver to be driven yet. "Autonomous vehicles"[1], "self-driving cars"[2], "driverless cars"[3], "robotic-cars"[4] are some terms to define such cars. As Eric Hilgendorf said, *"the terminology issues are important if one wants to be able to express oneself clearly and precisely."*[5] The use of terminology does not only differ from author to author, but also from government to government. Whilst some states in the USA prefer "autonomous vehicle"[6], in the UK "automated vehicle[7]" and in Germany "automated driving"[8] is preferred. As there is no standard terminology, the present writers prefer to use autonomous cars in the paper.

---

1 Ilková, Viktória/ Ilka, Adrian, "Legal aspects of autonomous vehicles – an overview (pre-print)". *21st International Conference on Process Control (PC) June 6–9, 2017,* Štrbské Pleso, Slovakia,428-433,

(https://www.researchgate.net/publication/317580822_Legal_aspects_of_autonomous_vehicles_-_an_overview_pre-print , Online, Access Date: 20.02.2021)*; KPMG, 2019 Autonomous Vehicles Readiness Index*,
(https://assets.kpmg/content/dam/kpmg/xx/pdf/2019/02/2019-autonomous-vehicles-readiness-index.pdf, Online, Access Date: 20.02.2021)

2 De Bruyne, Jan / Vanleenhove, Cedric, *"The Rise of Self-Driving Cars: Is the Private International Law Framework for non-contractual obligations posing a bump in the road?"*, IALS Student Law Review. 5. (https://journals.sas.ac.uk/lawreview/article/view/2819, Online, Access Date: 20.02.2021)

3 Baker & McKenzie, Global Driverless Vehicle Survey 2018,

(https://www.bakermckenzie.com/-/media/files/insight/publications/2018/03/global-driverless-vehicle-survey-2018/mm_global_driverlessvehiclesurvey2018_mar2018.pdf, Online, Access Date: 20.02.2021)

4 Thrun, Sebastian, *Toward Robotic Cars, Communications of the ACM*, April 2010,

(https://dl.acm.org/doi/10.1145/1721654.1721679 , Online, Access Date: 20.02.2021)

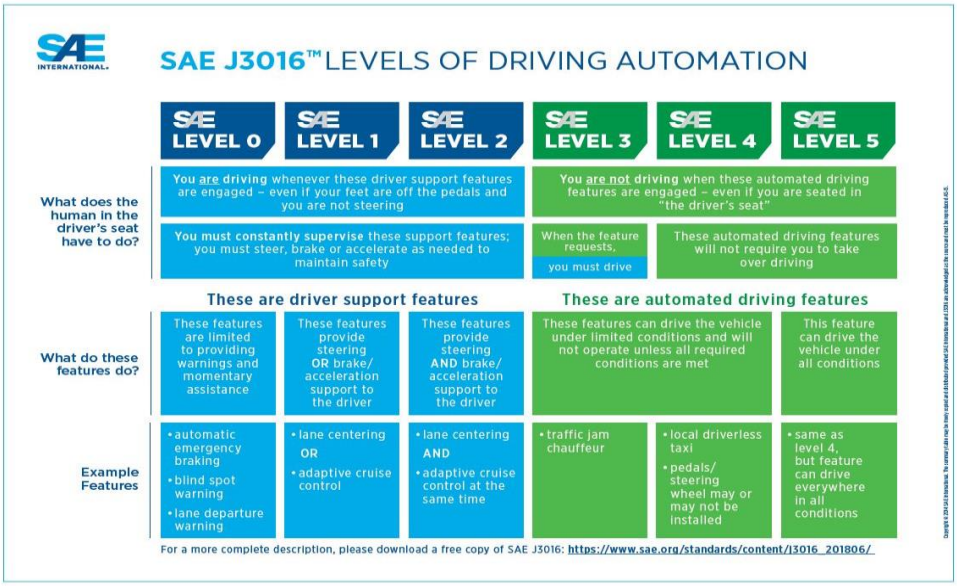
5 Hilgendorf, Eric, "Automated Driving and the Law", in *Robotics, Autonomics, and the Law* eds. Hilgendorf, Eric/Seidel, Uwe, Baden-Baden, Germany, Nomos, 2017, p.171-195

6 State of Nevada Department of Motor Vehicles, *Autonomous Vehicles* (https://dmvnv.com/autonomous.htm, Online, Access Date: 20.02.2021), State of California Department of Motor Vehicles, *Autonomous Vehicles* (https://www.dmv.ca.gov/portal/dmv/detail/vr/autonomous/bkgd, Online, Access Date: 20.02.2021)

7 *Automated and Electric Vehicles Act,* 2018
(http://www.legislation.gov.uk/ukpga/2018/18/contents/enacted, Online, Access Date: 20.02.2021)

8 Winkler, Kira Christin, "Autonomous Vehicles Regulation in Germany and the US and Its Impact on the German Car Industry", Master Thesis, Tilburg Law School, Tilburg University, Tilburg, June 2019, p.33 (http://arno.uvt.nl/show.cgi?fid=149595 , Online, Access Date: 20.02.2021)

The concept of autonomous cars may excite some while scaring others at the same time. It is a fact that the world as a whole is not ready to have fully autonomous cars on the road in terms of legal regulations. Since levels of automation differ, some states and organisations set some standards for the levels. In the study, the standards set by Society for Automotive Engineers *(SAE International)* are taken into considerations. The State of Arizona, where the accident occurred, also accepts these standards.[9] According to the SAE, there are 6 levels of automation starting from level 0 to level 5, as can be seen from the figure below.[10]



The paper's focus is the UBER autonomous car prototype's accident in Tempe, Arizona, the USA, on 18th March 2018.[11] The accident

[9] *Executive Order 2018-04, Advancing Autonomous Vehicle Testing and Operating: Prioritizing Public Safety*, State of Arizona, (https://apps.azdot.gov/files/sitefinity-files/Executive-Order-2018-04.pdf , Online, Access Date: 20.02.2021)

[10] Society for Automotive Engineers, *SAE J3016 Levels of Driving Automation*, (https://www.sae.org/news/2019/01/sae-updates-j3016-automated-driving-graphic, Online, Access Date: 20.02.2021)

[11] Uber was in preparation of "Level 4" of the National Highway Traffic Safety Administration (NHTSA) vehicle automation levels, meaning "the car can drive itself without a human driver". DeArman, Alexandra, The Wild, "Wild West: A Case Study of Self Driving Vehicle Testing in Arizona", 61 Arizona Law Review. 983 (2019), 984-1012, p. 988, footnote 28, https://arizonalawreview.org/the-wild-wild-west-a-case-study-of-self-driving-vehicle-testing-in-arizona/ , Online, Access Date: 20.02.2021) ; Shetty ,Sameepa, "Uber's self-driving cars are a key to its path to profitability",

is the first example of a traffic accident that resulted in the death of a pedestrian by an autonomous car.[12] The questions of who should be held liable or not and why they should be held liable arose just after the accident if an autonomous car kills someone.

In the study, what if the accident happened in Turkey, who would be held criminally liable will also be examined by also mentioning the criminal process in the USA.

1.HOW THE TRAFFIC ACCIDENT OCCURRED

According to the USA National Transportation Safety Board, the accident happened as follows;

"About 9:58 p.m., on Sunday, March 18, 2018, an Uber Technologies, Inc. test vehicle, based on a modified 2017 Volvo XC90 and operating with a self-driving system in computer control mode, struck a pedestrian on northbound Mill Avenue, in Tempe, Maricopa County, Arizona. The Uber test vehicle was occupied by one vehicle operator, a 44-year-old female. No passengers were in the vehicle.

In the area of the crash, northbound Mill Avenue consists of two left-turn lanes, two through lanes, and one bike lane. The crash occurred before the formation of a right-turn lane. Roadway lighting was present. The posted speed limit was 45 mph.

(https://www.cnbc.com/2020/01/28/ubers-self-driving-cars-are-a-key-to-its-path-to-profitability.html , Online, Access Date: 20.02.2021)

[12] One of the first cases of an autonomous system caused of death of a human being is the Aschaffenburg Case in 2012. In this case, even though the accident happened because of the system of lane keeping assistant, the car is not an autonomous car. The difference between autonomous system and autonomous car can be seen from the figure above. Hilgendorf, Eric, *"Autonomous systems, artificial intelligence and robots: An orientation from a criminal law perspective?"*, Journal of Law & Economic Regulation, Vol.12, No:2, (2019), 9-25, p.14;

The first case of an autonomous car caused of death of a human being is Tesla's car crash in Florida on 7th May 2016. In this case, the driver died while the car was on autonomous mode. Vlasic, Bill/Boudette,Neal E., *"Self-Driving Tesla Was Involved in Fatal Crash, U.S. Says"*, (https://www.nytimes.com/2016/07/01/business/self-driving-tesla-fatal-crash-investigation.html, Online, Accesed on 21.02.2021)

The first case of an autonomous car caused of death of a pedestrian, which is the topic of the study, is the Uber's car crash on 18th March 2018.

The first case of an auto-pilot system car caused of death of the passengers is Tesla's car crash on 17th April 2021. The importance of the crash is the car was on auto-pilot mode and no one was at the driver's seat at the moment of the crash. Sputnik, "*Sürücü koltuğunda kimsenin olmadığı ilk ölümcül kaza: Sürücüsüz Tesla aracının yaptığı kazada 2 can kaybı"*, https://sptnkne.ws/FY3b, Online, Accessed on 27.04.2021)

The crash occurred as the pedestrian, a 49-year-old female, walked a bicycle east across Mill Avenue. The Uber test vehicle was traveling in the right through lane when its right front side struck the pedestrian [.] As a result of the crash, the pedestrian died. The vehicle operator was not injured.

...

Uber had equipped the test vehicle with a developmental self-driving system. The system consisted of forward- and side-facing cameras, radars, LIDAR, navigation sensors, and a computing and data storage unit integrated into the vehicle. Uber had also equipped the vehicle with an aftermarket camera system that was mounted in the windshield and rear window and that provided additional front and rear videos, along with an inward-facing view of the vehicle operator. In total, 10 camera views were recorded over the course of the entire trip.

The self-driving system relies on an underlying map that establishes speed limits and permissible lanes of travel. The system has two distinct control modes: computer control and manual control. The operator can engage computer control by first enabling, then engaging the system in a sequence similar to activating cruise control. The operator can transition from computer control to manual control by providing input to the steering wheel, brake pedal, accelerator pedal, a disengage button, or a disable button.

The vehicle was factory equipped with several advanced driver assistance functions by Volvo Cars, the original manufacturer. The systems included a collision avoidance function with automatic emergency braking, known as City Safety, as well as functions for detecting driver alertness and road sign information. All these Volvo functions are disabled when the test vehicle is operated in computer control but are operational when the vehicle is operated in manual control.

According to Uber, the developmental self-driving system relies on an attentive operator to intervene if the system fails to perform appropriately during testing. In addition, the operator is responsible for monitoring diagnostic messages that appear on an interface in the center stack of the vehicle dash and tagging events of interest for subsequent review.

... At the time of the crash, the vehicle was traveling on its second loop of the test route ***and had been in computer control since 9:39 p.m. (i.e., for the preceding 19 minutes).***

According to data obtained from the self-driving system, the system first registered radar and LIDAR observations of the pedestrian about 6 seconds before impact, when the vehicle was traveling at 43 mph. ***As the vehicle and pedestrian paths converged, the self-driving system software classified the pedestrian as an unknown object, as a vehicle, and then as a bicycle with varying expectations of future travel path.*** *At 1.3 seconds before impact, the self-driving system determined that an emergency braking maneuver was needed to mitigate a collision (see figure 2).2* ***According to Uber,***

emergency braking maneuvers are not enabled while the vehicle is under computer control, to reduce the potential for erratic vehicle behavior. The vehicle operator is relied on to intervene and take action. The system is not designed to alert the operator.

The self-driving system data showed that the vehicle operator intervened less than a second before impact by engaging the steering wheel. The vehicle speed at impact was 39 mph. The operator began braking less than a second after the impact. The data also showed that all aspects of the self-driving system were operating normally at the time of the crash, and that there were no faults or diagnostic messages.

Several Uber self-driving system cameras captured the crash event. The videos were reviewed by the NTSB and the parties to the investigation. The forward-facing videos show the pedestrian coming into view and proceeding into the path of the vehicle. The videos also show that the pedestrian, once visible, did not look in the direction of the vehicle until just before impact. The videos show that the pedestrian was dressed in dark clothing and that the bicycle did not have any side reflectors. The bicycle had front and rear reflectors and a forward headlamp, but all were facing in directions perpendicular to the path of the oncoming vehicle. ***The videos show that the pedestrian crossed in a section of roadway not directly illuminated by the roadway lighting.***

The inward-facing video shows the vehicle operator glancing down toward the center of the vehicle several times before the crash. In a postcrash interview with NTSB investigators, the vehicle operator stated that she had been monitoring the self-driving system interface. The operator further stated that although her personal and business phones were in the vehicle, neither was in use until after the crash, when she called 911.

... Although toxicological specimens were not collected from the vehicle operator, responding officers from the Tempe Police Department stated that the vehicle operator showed no signs of impairment at the time of the crash.

... Toxicology test results for the pedestrian were positive for methamphetamine and marijuana."[13]

The test driver was distracted by watching a tv show while sitting in the driver seat. Examination of the driver's mobile phone and records from a video-streaming application on her phone show that the driver was streaming a video for the entire trip, including the moments before the crash.[14]

---

[13] The USA National Transportation Safety Board, Preliminary Report: Highway, HWY18MH010 (2018), (https://www.ntsb.gov/investigations/AccidentReports/Pages/HWY18MH010-prelim.aspx , Online, Access Date: 04.03.2021)

[14] The USA National Transportation Safety Board, "Accident Report NTSB/HAR-19/03 PB2019-101402 -Collision Between Vehicle Controlled by Developmental Automated

As reported by Accident Report NTSB/HAR-19/03 PB2019-101402, *"**the probable cause of the crash in Tempe, Arizona, was the failure of the vehicle operator to monitor the driving environment and the operation of the automated driving system because she was visually distracted throughout the trip by her personal cell phone**. Contributing to the crash were the Uber Advanced Technologies Group's (1) inadequate safety risk assessment procedures, (2) ineffective oversight of vehicle operators, and (3) lack of adequate mechanisms for addressing operators' automation complacency—all a consequence of its inadequate safety culture. Further factors contributing to the crash were (1) the impaired pedestrian's crossing of N. Mill Avenue outside a crosswalk, and (2) the Arizona Department of Transportation's insufficient oversight of automated vehicle testing."*[15]

2.THE CRIMINAL INVESTIGATION PROCESS IN THE USA AND EVALUATION OF THE ACCIDENT WITHIN THE SCOPE OF TURKISH CRIMINAL LAW

In the study, it will be supposed that all necessary legislation in Turkey was made to regulate autonomous cars. Neither the Turkish Road Traffic Code nor Regulation of Road Traffic regulates autonomous cars. Turkish Road Traffic Code does not regulate autonomous cars; however, it puts a ban on using a mobile phone or car phones while driving in article 73/1.[16] This regulation does not fall with the purpose of using an autonomous car because one of the purposes of autonomous cars is to create time for people while driving. The Code should be

---

Driving System and Pedestrian Tempe, Arizona March 18, 2018", Washington, DC. , 19 November 2019, p.42 (https://ntsb.gov/investigations/AccidentReports/Reports/HAR1903.pdf , Online, Access Date: 05.03.2021); The safety driver's account on Hulu, an online service streaming tv shows and movies, was playing tv shows for 42 minutes on the night of the crash ending at 9:59 pm, Somerville, Heather/ Shepardson, David, "Uber car's 'safety' driver streamed TV show before fatal crash: police", (https://www.reuters.com/article/us-uber-selfdriving-crash/uber-cars-safety-driver-streamed-tv-show-before-fatal-crash-police-idUSKBN1JI0LB , Online, Access Date: 05.03.2021)

[15] The USA National Transportation Safety Board, "Accident Report NTSB/HAR-19/03 PB2019-101402 -Collision Between Vehicle Controlled by Developmental Automated Driving System and Pedestrian Tempe, Arizona March 18, 2018", Washington, DC. , 19 November 2019, p.v-vi , (https://ntsb.gov/investigations/AccidentReports/Reports/HAR1903.pdf , Online, Access Date: 05.03.2021)

[16] Article 73/1 of Turkish Road Traffic Code (Karayolları Trafik Kanunu), Law No: 2918 , (https://www.mevzuat.gov.tr/MevzuatMetin/1.5.2918.pdf , Online, Access Date: 05.03.2021) ; There are many examples of the articles which do not match with the features of autonomous cars from descriptions to conditions of driving licences, driving educations, obligations of drivers and pedestrians. For this reason, the Code is assumed to regulate the cars in the study.

rewritten to describe autonomous cars and regulate the cars to fit into society and the purpose of the cars. As yet, the only regulation in Turkish Legislation that describes autonomous car is "Type Approval Regulation Regarding the General Safety of Motor Vehicles and Trailers and Parts, Systems and Separate Technical Units Designed for Them and the Protection of Unprotected Highway Users and Passengers" which will enter into force in 6th July 2022.[17]

The autonomous car is defined by article 3/t of the Regulation as follows; *"Motor vehicle designed and manufactured to move autonomously for a specified period of time without constant control of the driver, but where driver's intervention is still expected or required."*[18] As can be seen from the definition, a driver's intervention is still either expected or required even though a car can move autonomously. This definition may cause problems in the future where the level 4 and 5 cars to be on the roads as they are expected to drive without any drivers' intervention.

The incident will be evaluated regarding Turkish Criminal Law after mentioning the criminal processing in the USA.

As the incident occurred in Tempe, Arizona, the USA, the Tempe Police Department referred the case to the Maricopa County Attorney's Office *(MCAO)* for possible charges, including negligent homicide.[19] After that, the case was delivered to the Yavapai County Attorney's Office *(YCAO)* to make a charging decision because of a possible conflict of interest arising from the Maricopa County Attorney's Office past partnership with Uber.[20] In the letter from Yavapai County Attorney Sheila Polk to Maricopa County Attorney Bill Montgomery, Sheila Polk stated "*…there is no basis for criminal liability for the Uber corporation arising from this matter. Because this determination eliminates the basis for the MCAO conflict, we are returning the matter to MCAO for further review for criminal charges*." against Vasquez.[21] According to the Indictment against Rafael

---

17 Motorlu Araçlar ve Römorkları ile Bunlar İçin Tasarlanan Aksam, Sistem ve Ayrı Teknik Ünitelerin Genel Güvenliği Ve Korunmasız Karayolu Kullanıcılarının ve Yolcuların Korunmasi İle İlgili Tip Onayı Yönetmeliği (AB/2019/2144), Official Gazette (Resmi Gazete), No:31127, Date:14.05.2020, (https://www.resmigazete.gov.tr/eskiler/2020/05/20200514-2.htm , Online, Access Date: 05.03.2021); Some articles of the Regulation has already entered into force at the moment of promulgation. See Article 18.

18 Article 3/t of the Type Approval Regulation

19 Coppola, Chris/ Frank, BrieAnna J., "Report: Uber Driver Was Watching 'The Voice' Moments Before Fatal Tempe Crash", AZCENTRAL (17.03.2021), (https://www.azcentral.com/story/news/local/tempe-breaking/2018/06/21/uber-self-driving-car-crash-tempe-police-elaine-herzberg/724344002/ , Online, Access Date: 05.03.2021)

20 Ibid. , DeArman, 2019, p.1001

21 DeArman, 2019, p.1002

Stuart Vasquez (the driver), she is accused of negligent homicide.[22] The MCAO stated that "*Distracted driving is an issue of great importance in our community. When a driver gets behind the wheel of a car, they have a responsibility to control and operate that vehicle safely and in a law-abiding manner.*"[23] At Vasquez's arraignment on 15th September 2020, she pled not guilty and the court ordered that she be released to pretrial services with ankle monitoring.[24] At the time of this study, no judgement against the driver has been made.[25]

In the study, all necessary legislation in Turkey is supposed to be made to regulate autonomous cars as said above.

Evaluating the accident within the scope of Turkish criminal law, offences against life are regulated under Chapter 2 -Offences against Persons- of the Second Volume -Special Provisions- of Turkish Criminal Code (the Code).[26] Articles 81 and 85 of the Code regulate homicide depending on the intention. Article 81 regulates intentional homicide while article 85 regulates negligent homicide.

In accordance with article 21, to consider an act as a crime, a crime must be intended by the perpetrator. To hold someone liable because of their negligence, it must be regulated separately by the law because the liability of negligence is exceptional. The main difference between intention and negligence is that in intentional crimes, the person is punished for committing knowingly and willingly the act defined by the law, while in negligent crimes, he is punished for not showing the necessary care to avoid unwilling consequences.[27]

By considering the facts given in the report, the driver did not intend to kill the pedestrian. For this reason, negligence will be examined if it is either ordinary negligence or conscious negligence.

---

[22] The State of Arizona (Plaintiff) vs. Rafael Stuart Vasquez (Defendant), Indictment 785 GJ 251 , (https://www.maricopacountyattorney.org/CivicAlerts.aspx?aid=751 , Online, Access Date: 05.03.2021)

[23] Maricopa County Attorney's Office, "Grand Jury Indictment Returned on Rafael (aka Rafaela) Vasquez", (https://www.maricopacountyattorney.org/CivicAlerts.aspx?aid=751 , Online, Access Date: 05.03.2021)

[24] Age.

[25] DeArman, 2019, p.1002

[26] Turkish Criminal Code, Law No.5237
(http://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=77393&p_count=96544 , Online, Access Date: 05.03.2021); In Turkish, Türk Ceza Kanunu
(https://www.mevzuat.gov.tr/MevzuatMetin/1.5.5237.pdf, Online, Access Date: 05.03.2021)

[27] Artuk, Mehmet Emin /Gökcen, Ahmet/Alşahin, Mehmet Emin/Çakır,Kerim , *Ceza Hukuku Genel Hükümler* Adalet Yayınevi, Ankara, 2020,14. Baskı, p.433

Negligence is divided into two: ordinary negligence and conscious (intentional, gross) negligence. According to article 22, negligence is regulated as *"(1) Acts conducted with negligence shall be subject to a punishment only where explicitly prescribed by law.*

(2) Negligence is the execution of a behaviour without foreseeing the consequence specified in the legal definition of the crime, due to the violation of the duty of care.

(3) An act is conducted with conscious negligence when the consequence is foreseen but not wanted; in such case the punishment imposed for negligent act shall be increased from one third to one half."[28]

Article 22/2 regulates ordinary negligence while article 22/3 regulates conscious negligence. The difference between ordinary negligence and conscious negligence is explained by the article's reasoning as follows: "*The feature that distinguishes conscious negligence from ordinary negligence is that the result of the act was predicted by the perpetrator but not wanted…*"[29]

In the case of conscious negligence, the perpetrator predicts the outcome, but acts with the confidence that the outcome will not occur. The source of this trust can be his/her knowledge, experiences, personal abilities of the perpetrator or the nature of the means used.[30]

The Court of Cassation has made various decisions regarding traffic accidents in order to decide if it is ordinary negligence or conscious negligence. For example; hitting someone while passing through the red light considered as conscious negligent homicide[31] while in an accident where the defendant without a driver's license went into traffic in the residential area at night to learn how to drive with the car under his administration, when he came to the scene of the accident and lost his steering control and hit 3 people on the sidewalk, one person died and two people were injured considered as ordinary negligence.[32]

The fault of the perpetrator or the degree of the fault matters to determine the punishment. Determination of punishment is regulated by article 61 of the Code. In the determination of punishment, the criteria regulated by article 61 of the Code are as follows;

---

28 Article 22 of Turkish Criminal Code

29 Artuk/Gökcen/Alşahin/Çakır, 2020, p.454

30 Artuk/Gökcen/Alşahin/Çakır, 2020, p. 454-455

31 Yargıtay 9. CD. 897/6399. Date. 17.09.2007. cited by Artuk et al. p.457

32 Yargıtay 12. CD. 2015/9605E., 2016/8110K. Date. 09.05.2016 (https://www.kararara.com/forum/viewtopic.php?t=314553&start=5 , Online, Access Date: 05.03.2021)

"*(1) The judge, in the concrete incident;*

a) The way the crime was committed,

b) The tools used in the commission of the crime,

c) The time and place of the crime,

d) The importance and value of the subject of the crime,

e) The severity of the damage or danger that has occurred,

f) The degree of the perpetrator's intention or negligent fault,

g) The purpose and motive of the perpetrator,

Considering, determines the basic penalty between the lowest and upmost limit of the penalty stipulated in the legal definition of the crime committed. (2) Reduction or increase of punishment in case of eventual intent or conscious negligence shall be calculated over the punishment to be determined according to the first subsection".[33] For negligent crimes, a special provision in article 22/4 of the Code states that *"The punishment to be given due to negligent offense is determined according to the fault of the perpetrator".*[34]

Regarding the victim's fault, it only matters to determine the penalty but not to determine whether or not the perpetrator's mental element is either ordinary negligence or conscious negligence. In a traffic accident case, The Court ruled *"in determining whether the crime was committed by "ordinary negligence" or "conscious negligence", it does not matter whether the deceased was also at fault or not, because the determination of the existence of the fault or its degree is a process that should be done at the stage of determining the penalty after the mental element is determined by the judge".*[35]

With respect to the incident in Tempe, the USA, what is seen from the report, the incident happened because of the driver's fault. Even though there are other factors for the accident which may be taken into account such as the fact that the pedestrian was positive for methamphetamine and marijuana and, the incident could have been prevented if the driver had given enough attention to monitor the driving environment, as said above, the victim's fault does not matter in order to determine if the perpetrator committed the crime by either ordinary negligence or conscious negligence.

---

[33] Article 61 of Turkish Criminal Code

[34] Article 22/4 of Turkish Criminal Code

[35] Yargıtay Ceza Genel Kurulu E. 2009/9-185 K. 2009/273 Date:24.11.2009, (https://www.kararara.com/forum/viewtopic.php?t=32332 , Online, Access Date: 05.03.2021)

In a similar incident occurred in Turkey, the Court of Cassation has made the following decision by determining that the crime was committed by ordinary negligence;

"In the incident where the accused caused his/her death by hitting a pedestrian with his vehicle in the management and administration during the night while the pedestrian were crossing over from the left side and getting close to the pedestrian crossing sign on a two-way undivided road with 18-meter-wide street lighting in the residential area,

Considering that the deceased was wearing dark clothes, the accused stopped 20 meter after the impact point and there is no pedestrian crossing line at the place where the deceased crosses, the determination of excess punishment by applying conscious negligence provisions on the accused without considering the conditions of conscious negligence."[36]

It could be said that the driver failed to take proper care or precaution during driving without being aware of the legal consequences of its act as the driver did not pay enough attention to monitor the driving environment and the operation of the automated driving system because the driver was visually distracted throughout the trip by her personal mobile phone as mentioned in the report. One may say that the car is autonomous, and she does not have to pay attention to monitor the driving environment all the time. Moreover, focusing on the driving environment all the time does not match the purpose of autonomous cars. However, she was a test driver, and the car was a prototype. As the car is a prototype, Uber designated a driver to be responsible for intervention if the system fails to perform appropriately during testing and to monitor diagnostic messages that appear on an interface in the centre stack of the vehicle dash and tagging events of interest for subsequent review.

The car's speed was 45 mph when it approached the vicinity of the crash site, travelling in the right lane. However, it was at the speed of 39 mph at the moment of collision which is within the legal speed limit of 45 mph.[37] Liability of conscious negligence could have been thought if the car's speed exceeds the legal limit and the driver predicted that he could hit someone and cause his death, but relying on his driving skills, his luck, and the fact that pedestrians would be careful to protect themselves from vehicles, and he acted with the wrong assumption that

[36] Yargıtay 12.CD. 2013/298999 E., 2014/23020 K. Date:17.11.2014 (https://legalbank.net/belge/y-12-cd-e-2013-29899-k-2014-23020-t-17-11-2014/2318685/ , Online, Access Date: 05.03.2021)

[37] The USA National Transportation Safety Board, Collision Between Vehicle Controlled by Developmental Automated Driving System and Pedestrian Tempe, Arizona March 18, 2018 Accident Report NTSB/HAR-19/03 PB2019-101402, p. 1-2

the unintended consequences would not happen. Also, the driver did not lower the car's speed.[38]

Under lights of given information and sample judgements, the present writers believe that the driver should be held liable by ordinary negligent homicide. To think that the act was committed by conscious negligence, the result of the act should have been predicted by the driver but not wanted. Considering the facts given in the report, it would be an excessive comment to think of conscious negligence in the incident.

According to article 85 of the Code, the punishment of negligent homicide is imprisonment from two years to six years.[39] The Judges will determine the punishment by considering the degree of the driver's fault by also taking into account of pedestrian's fault.

CONCLUSION & RECOMMENDATIONS

The accident happened by UBER's autonomous car prototype, in Tempe, Arizona, the USA on 18th March 2018 while the car was on autonomous mode and under administration and monitoring of the test driver. The driver has been accused of negligent homicide by Yavapai County Attorney's Office. At the time of this study, no judgement has been made yet.

The incident has been studied as it is the first of its kind by showing the future's possible problems. Although the accident did not occur in Turkey, the future of having autonomous cars on roads is very close. Neither the Turkish Road Traffic Code nor Regulation of Road Traffic regulate autonomous cars. The only regulation in Turkish Legislation that describes autonomous car is "Type Approval Regulation Regarding the General Safety of Motor Vehicles and Trailers and Parts, Systems and Separate Technical Units Designed for Them and the Protection of Unprotected Highway Users and Passengers" which will enter into force in 6th July 2022. For this reason, the incident has been evaluated as if there were no legal problems regarding having autonomous cars on roads.

Evaluating the incident with regard to the Turkish Criminal Code, the question of whether the driver should be held liable for ordinary negligent homicide or conscious negligent homicide has been the focus of the study as the driver's intention was not to kill the pedestrian intentionally by the given facts in the report. The fault of the perpetrator or the degree of the fault matters to determine the punishment.

[38] Yargıtay Ceza Genel Kurulu 2009/9-185E. 2009/273 K. Date:24.11.2009, (https://www.kararara.com/forum/viewtopic.php?t=32332 , Online, Access Date: 05.03.2021)

[39] Article 85/1 of the Code

Regarding the victim's fault, it only matters to determine the penalty but not to determine whether or not the perpetrator's mental element is either ordinary negligence or conscious negligence.

The incident happened because of the driver's fault as she failed to take proper care during her trip, as explained in the report. Considering the facts given in the report, it would be an excessive comment to think of conscious negligence in the incident. To present writers, the driver should be held liable by ordinary negligent homicide. According to article 85 of the Code, the punishment of negligent homicide is imprisonment from two years to six years.[40] The Judges will determine the punishment by considering the degree of the driver's fault by also taking into account the pedestrian's fault.

One of the study's purposes is to show if Turkey is ready for the future regarding its legislation. As can be seen from the comments above, Turkey is not ready yet, for this reason, some recommendations has been given below.

a) Autonomous cars should be defined either by a special Code as the UK[41] did or by amending the current Code as Germany[42] did. The regulation should not only define the cars but also regulate it in detail such as conditions of driver licences, education of drivers, the obligation of drivers, liabilities of drivers etc.

b) New developing technologies should be used to reduce to risk of people's lives while testing the cars. For example, applications of 3D Map[43] can be preferred to test the cars rather than testing the cars on real roads.

If an autonomous car without any drivers or passengers commits a fatal traffic accident, who should be criminally liable will be the topic of the present writers' next study.

---

40 Article 85/1 of the Code

41 Automated and Electric Vehicles Act 2018 (http://www.legislation.gov.uk/ukpga/2018/18/contents/enacted, Online, Access Date: 05.03.2021)

42 Bundesministerium der Justiz und für Verbracherschutz, Road Traffic Act - Straßenverkehrsgesetz, (https://www.gesetze-im-internet.de/stvg/index.html , , Online, Access Date: 05.03.2021)

43 Aupperlee, Aaron, "Pittsburgh's Edge Case Research can simulate self-driving car 'nightmare scenario'", 04.04.2018, (https://archive.triblive.com/business/technology/pittsburghs-edge-case-research-can-simulate-self-driving-car-nightmare-scenario/ , Online, Access Date: 05.03.2021)

BIBLIOGRAPHY

Alexandra DeArman, *"The Wild, Wild West: A Case Study of Self Driving Vehicle Testing in Arizona"*, 61 Arizona Law Review. 983 (2019), 984-1012, (https://arizonalawreview.org/the-wild-wild-west-a-case-study-of-self-driving-vehicle-testing-in-arizona/ , Online, Access Date: 20.02.2021)

Artuk, Mehmet Emin /Gökcen, Ahmet/Alşahin, Mehmet Emin/Çakır,Kerim , *Ceza Hukuku Genel Hükümler*, Adalet Yayınevi, Ankara, 2020,14. Baskı,

Aupperlee, Aaron, "*Pittsburgh's Edge Case Research can simulate self-driving car 'nightmare scenario'"*, 04.04.2018, (https://archive.triblive.com/business/technology/pittsburghs-edge-case-research-can-simulate-self-driving-car-nightmare-scenario/ , Online, Access Date: 05.03.2021)

Baker & McKenzie, *Global Driverless Vehicle Survey 2018*, (https://www.bakermckenzie.com/-/media/files/insight/publications/2018/03/global-driverless-vehicle-survey-2018/mm_global_driverlessvehiclesurvey2018_mar2018.pdf, Online, Access Date: 20.02.2021)

Coppola, Chris/ Frank, BrieAnna J., *"Report: Uber Driver Was Watching 'The Voice' Moments Before Fatal Tempe Crash"*, AZCENTRAL (17.03.2021), (https://www.azcentral.com/story/news/local/tempe-breaking/2018/06/21/uber-self-driving-car-crash-tempe-police-elaine-herzberg/724344002/ , Online, Access Date: 05.03.2021)

De Bruyne, Jan / Vanleenhove, Cedric, *"The Rise of Self-Driving Cars: Is the Private International Law Framework for non-contractual obligations posing a bump in the road?"*, IALS Student Law Review. *5*. (https://journals.sas.ac.uk/lawreview/article/view/2819, Online, Access Date: 20.02.2021)

Executive Order 2018-04, *Advancing Autonomous Vehicle Testing and Operating:Prioritizing Public Safety*, State of Arizona, (https://apps.azdot.gov/files/sitefinity-files/Executive-Order-2018-04.pdf , Online, Access Date: 20.02.2021)

Hilgendorf, Eric "Autonomous systems, artificial intelligence and robots: An orientation from a criminal law perspective?", Journal of Law & Economic Regulation, Vol.12, No:2, (2019), 9-25

Hilgendorf, Eric, "Automated Driving and the Law", in *Robotics, Autonomics, and the Law* eds. Hilgendorf, Eric/Seidel, Uwe, Baden-Baden, Germany, Nomos, 2017, p.171-195

Ilková, Viktória/ Ilka, Adrian, “Legal aspects of autonomous vehicles – an overview (pre-print)”. *21st International Conference on Process Control (PC) June 6–9, 2017,* Štrbské Pleso, Slovakia,428-433

(https://www.researchgate.net/publication/317580822_Legal_aspects_of_autonomous_vehicles_-_an_overview_pre-print , Online, Access Date: 20.02.2021)

KPMG, 2019 Autonomous Vehicles Readiness Index,

(https://assets.kpmg/content/dam/kpmg/xx/pdf/2019/02/2019-autonomous-vehicles-readiness-index.pdf, Online, Access Date: 20.02.2021)

Maricopa County Attorney’s Office, “Grand Jury Indictment Returned on Rafael (aka Rafaela) Vasquez”

(https://www.maricopacountyattorney.org/CivicAlerts.aspx?aid=751 , Online, Access Date: 05.03.2021)

Shetty, Sameepa, “Uber’s self-driving cars are a key to its path to profitability”

(https://www.cnbc.com/2020/01/28/ubers-self-driving-cars-are-a-key-to-its-path-to-profitability. html , Online, Access Date: 20.02.2021)

Society for Automotive Engineers, *SAE J3016 Levels of Driving Automation*

(https://www.sae.org/news/2019/01/sae-updates-j3016-automated-driving-graphic, Online, Access Date: 20.02.2021)

Somerville, Heather/ Shepardson, David, “Uber car's 'safety' driver streamed TV show before fatal crash: police”

(https://www.reuters.com/article/us-uber-selfdriving-crash/uber-cars-safety-driver-streamed-tv-show-before-fatal-crash-police-idUSKBN1JI0LB , Online, Access Date: 05.03.2021)

Sputnik, “Sürücü koltuğunda kimsenin olmadığı ilk ölümcül kaza: Sürücüsüz Tesla aracının yaptığı kazada 2 can kaybı”, https://sptnkne.ws/FY3b, Online, Accesed on 27.04.2021

State of California Department of Motor Vehicles, *Autonomous Vehicles*

(https://www.dmv.ca.gov/portal/dmv/detail/vr/autonomous/bkgd, Online, Access Date: 20.02.2021)

State of Nevada Department of Motor Vehicles, *Autonomous Vehicles*

(https://dmvnv.com/autonomous.htm, Online, Access Date: 20.02.2021),

The USA National Transportation Safety Board, Preliminary Report: Highway, HWY18MH010 (2018)
(https://www.ntsb.gov/investigations/AccidentReports/Pages/HWY18MH010-prelim.aspx , Online, Access Date: 04.03.2021)

The USA National Transportation Safety Board, “Accident Report NTSB/HAR-19/03 PB2019-101402 -Collision Between Vehicle Controlled by Developmental Automated Driving System and Pedestrian Tempe, Arizona March 18, 2018”, Washington, DC. , 19 November 2019

(https://ntsb.gov/investigations/AccidentReports/Reports/HAR1903.pdf , Online, Access Date: 05.03.2021)

Thrun, Sebastian, *Toward Robotic Cars, Communications of the ACM*, April 2010

(https://dl.acm.org/doi/10.1145/1721654.1721679 , Online, Access Date: 20.02.2021)

Vlasic, Bill/Boudette,Neal E., "Self-Driving Tesla Was Involved in Fatal Crash, U.S. Says"

(https://www.nytimes.com/2016/07/01/business/self-driving-tesla-fatal-crash-investigation.html, Online, Access Date: 21.02.2021)

Winkler, Kira Christin, "Autonomous Vehicles Regulation in Germany and the US and Its Impact on the German Car Industry", Master Thesis, Tilburg Law School, Tilburg University, Tilburg, June 2019

(http://arno.uvt.nl/show.cgi?fid=149595 , Online, Access Date: 20.02.2021)

CASES & CODES

Automated and Electric Vehicles Act, 2018

(http://www.legislation.gov.uk/ukpga/2018/18/contents/enacted, Online, Access Date:20.02.2021)

Bundesministerium der Justiz und für Verbracherschutz, Road Traffic Act – Straßenverkehrsgesetz, (https://www.gesetze-im-internet.de/stvg/index.html , , Online, Access Date: 05.03.2021)

Motorlu Araçlar ve Römorkları İle Bunlar İçin Tasarlanan Aksam, Sistem ve Ayrı Teknik Ünitelerin Genel Güvenliği Ve Korunmasız Karayolu Kullanıcılarının ve Yolcuların Korunmasi İle İlgili Tip Onayı Yönetmeliği (AB/2019/2144), Official Gazette (Resmi Gazete), No:31127, Date:14.05.2020, (https://www.resmigazete.gov.tr/eskiler/2020/05/20200514-2.htm , Online, Access Date: 05.03.2021)

The State of Arizona (Plaintiff) vs. Rafael Stuart Vasquez (Defendant), Indictment 785 GJ 251,
(https://www.maricopacountyattorney.org/CivicAlerts.aspx?aid=751 , Online, Access Date: 05.03.2021)

Turkish Criminal Code (Türk Ceza Kanunu),

(http://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=77393&p_count=96544 ,

Online, Access Date: 05.03.2021)

Türk Ceza Kanunu

(https://www.mevzuat.gov.tr/MevzuatMetin/1.5.5237.pdf, Online, Access Date: 05.03.2021)

Turkish Road Traffic Code (Karayolları Trafik Kanunu), Law No: 2918,

(https://www.mevzuat.gov.tr/MevzuatMetin/1.5.2918.pdf , Online, Access Date: 05.03.2021)

Yargıtay Ceza Genel Kurulu E. 2009/9-185 K. 2009/273 Date: 24.11.2009,

(https://www.kararara.com/forum/viewtopic.php?t=32332 , Online, Access Date: 05.03.2021);

Yargıtay 12.CD. 2013/298999 E., 2014/23020K. Date:17.11.2014

(https://legalbank.net/belge/y-12-cd-e-2013-29899-k-2014-23020-t-17-11-2014/2318685/ , Online, Access Date: 05.03.2021)